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Report of the United Nations Scientific Committee on the Effects of Atomic Radiation

Sixty-second session
(1-5 June 2015)

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Seventieth session
Supplement No. 46

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Chapter I

Introduction

1. Since the establishment of the United Nations Scientific Committee on the Effects of Atomic Radiation by the General Assembly in its resolution 913 (X) of 3 December 1955, the mandate of the Committee has been to undertake broad assessments of the sources of ionizing radiation and its effects on human health and the environment.[1] In pursuit of its mandate, the Committee thoroughly reviews and evaluates global and regional exposures to radiation. The Committee also evaluates evidence of radiation-induced health effects in exposed groups and advances in the understanding of the biological mechanisms by which radiation-induced effects on human health or on non-human biota can occur. Those assessments provide the scientific foundation used, inter alia, by the relevant agencies of the United Nations system in formulating international standards for the protection of the general public, workers and patients against ionizing radiation;[2] those standards, in turn, are linked to important legal and regulatory instruments.

2. Exposure to ionizing radiation arises from naturally occurring sources (such as radiation from outer space and radon gas emanating from rocks in the Earth) and from sources with an artificial origin (such as medical diagnostic and therapeutic procedures; radioactive material resulting from nuclear weapons testing; energy generation, including by means of nuclear power; unplanned events such as the nuclear power plant accidents at Chernobyl in 1986 and that following the great east-Japan earthquake and tsunami of March 2011; and workplaces where there may be increased exposure to artificial or naturally occurring sources of radiation).

[1] The United Nations Scientific Committee on the Effects of Atomic Radiation was established by the General Assembly at its tenth session, in 1955. Its terms of reference are set out in resolution 913 (X). The Committee was originally composed of the following Member States: Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia (later succeeded by Slovakia), Egypt, France, India, Japan, Mexico, Sweden, Union of Soviet Socialist Republics (later succeeded by the Russian Federation), United Kingdom of Great Britain and Northern Ireland and United States of America. The membership of the Committee was subsequently enlarged by the Assembly in its resolution 3154 C (XXVIII) of 14 December 1973 to include the Federal Republic of Germany (later succeeded by Germany), Indonesia, Peru, Poland and the Sudan. By its resolution 41/62 B of 3 December 1986, the Assembly increased the membership of the Committee to a maximum of 21 members and invited China to become a member. In its resolution 66/70 of 9 December 2011, the Assembly further enlarged the membership of the Committee to 27 and invited Belarus, Finland, Pakistan, the Republic of Korea, Spain and Ukraine to become members.

[2] For example, the international basic safety standards for radiation protection and safety of radiation sources, currently co-sponsored by the European Commission, the Food and Agriculture Organization of the United Nations, the International Atomic Energy Agency, the International Labour Organization, the Nuclear Energy Agency of the Organization for Economic Cooperation and Development, the Pan American Health Organization, the United Nations Environment Programme and the World Health Organization.

Chapter II

Deliberations of the United Nations Scientific Committee on the Effects of Atomic Radiation at its sixty-second session

3. The Committee held its sixty-second session in Vienna from 1 to 5 June 2015.[3] Under arrangements agreed at the sixty-first session, the outgoing Chair, Carl-Magnus Larsson (Australia), opened the session, at which new officers were then elected to serve for the remainder of the Committee's sixty-second session and for its sixty-third session: Yoshiharu Yonekura (Japan), Chair; John Hunt (Brazil), Peter Jacob (Germany) and Hans Vanmarcke (Belgium), Vice-Chairs; and Michael Waligórski (Poland), Rapporteur.

4. The Committee took note of General Assembly resolution 69/84 on the effects of atomic radiation. It also took note of the report of the Secretary-General on the impact of the increase in the membership of the United Nations Scientific Committee on the Effects of Atomic Radiation, and possible approaches to further increases (A/69/350). It recalled that it had decided to consider its long-term strategic directions beyond the period covered by its present strategic plan (2014-2019), so as to help to inform future deliberations of the Assembly on the Committee's membership. The Committee discussed material developed on the matter, and expected to report on its conclusions to the General Assembly at its seventy-first session.

A. Present programme of work

1. Developments since the Committee's 2013 report on the levels and effects of radiation exposure due to the nuclear accident following the great east-Japan earthquake and tsunami

5. Following its assessment of the levels and effects of radiation exposure due to the nuclear accident after the 2011 great east-Japan earthquake and tsunami, as presented in its 2013 report to the General Assembly (A/68/46) and the supporting detailed scientific annex,[4] the Committee had put in place arrangements for follow-up activities to enable it to remain abreast of additional information as it was published in the scientific literature. A considerable amount of additional relevant information had already been published or become available before the publication of the scientific annex. New material is still being published and will continue to be in the foreseeable future, including under international and national initiatives.[5]

6. The Committee identified a large number of new publications that had become available between the time it conducted its assessment and the end of 2014, and

[3] The sixty-second session was also attended by observers for the World Health Organization, the International Atomic Energy Agency, the International Commission on Radiological Protection and the International Commission on Radiation Units and Measurements.

[4] United Nations publication, Sales No. E.14.IX.1.

[5] At the time of the sixty-second session, the International Atomic Energy Agency report on the accident, entitled "The Fukushima Daiichi accident: report by the Director General", had not been made public, and had thus not been evaluated by the Committee for the purposes of the present report.

systematically appraised about 80 of those in the lead-up to its sixty-second session. More than half of those 80 publications corroborated one or another of the major assumptions made by the Committee in its 2013 report. None of them challenged the report's major assumptions or affected its main findings, while some needed further analysis or more conclusive evidence from additional research. The Committee, as part of its continued efforts to identify and systematically evaluate new information as it came to light, would appraise other publications already identified and evaluate and periodically report how those publications affected the conclusions reached in its 2013 report. Depending on the outcome, the Committee expected to consider, at an appropriate time, the need to update that report.

7. The Committee expressed its gratitude to organizations and individuals that had engaged in the debate on the Committee's findings, and in some cases had publicized critiques of the 2013 report. It discussed and endorsed a commentary on the main themes appearing in those critiques to provide greater clarity where its judgement and/or impartiality had been questioned. The Committee considered the debate on its findings an important element of transparency and had therefore engaged in scientific forums, public dialogues and other outreach activities (see also section 6, entitled "Outreach activities").

8. The Committee requested the secretariat to make the findings of its review of new scientific literature and its commentary on the critiques available as a non-sales publication in both English and Japanese.

2. Updated methodology for estimating human exposures due to radioactive discharges and evaluation of radiation exposures from electricity generation

9. The Committee discussed two draft scientific annexes, one on updating its methodology for estimating human exposures due to radioactive discharges into the environment, and the other on the evaluation of radiation exposures from electricity generation. The Committee noted that the update of its methodology and the development of associated electronic workbooks that implemented the methodology were now essentially finished. The workbooks were to be used in the coming year to complete, in an internally consistent manner, the subsequent assessment of radiation exposures of populations from various types of electricity generation.

10. The Committee noted that progress on the draft scientific annex on radiation exposures from electricity generation had been hampered by, among other things, gaps in the available data on releases associated with electricity generated from non-nuclear energy sources, which contrasted with the thorough data collection and monitoring required of the nuclear energy industry. However, the Committee recommended that the scientific annex be completed on the basis of reasonable and transparent assumptions where precise data were not available, and requested the secretariat to expedite its completion on that basis. Because consistency needed to be maintained between the methodology and the assessment of radiation exposures from electricity generation, the Committee expected to formally approve for publication both documents at its next session.

3. Biological effects from selected internal emitters

11. The Committee discussed progress on evaluations of the biological effects of exposure to selected internal emitters for two specific radionuclides: tritium and

uranium. An introduction had been added that covered general aspects common to all internal emitters. A similar structure for the two draft scientific annexes was agreed upon. The review of the literature was essentially complete. The Committee requested that final conclusions be drawn from the material, which should be structured and streamlined in support of those conclusions. The Committee expected that final versions of the evaluations could be presented at its sixty-third session.

4. Cancer epidemiology of exposures at low dose-rates due to environmental radiation

12. The Committee discussed progress on an evaluation of epidemiological studies of low-dose-rate exposures of the public to naturally occurring and artificial environmental sources of radiation. The Committee acknowledged that the scientific review had been considerably improved. In the coming year, the strengths and limitations of each of the studies needed to be described. An additional section of the report should discuss the feasibility of improving the studies and, where applicable, the methods that could be used for that purpose.

5. Collection of data on radiation exposures, in particular on medical and occupational exposures

13. The Committee took note of a progress report by the secretariat on the collection, analysis and dissemination of data on radiation exposures, in particular on medical and occupational exposures. The Committee welcomed the fact that the General Assembly, in its resolution 69/84, had encouraged Member States to nominate a national contact person to facilitate coordination of the collection and submission of data on the exposure of the public, workers and patients. Forty-five Member States had nominated national contact persons by the sixty-second session of the Committee.

14. In 2014, the secretariat had launched an online platform for the collection of data on medical exposures and had invited all Member States to take part in the Committee's Global Survey of Medical Radiation Usage and Exposures. In preparation for the Global Survey it had fostered close cooperation with the International Atomic Energy Agency, the World Health Organization and the International Radiation Protection Association. The Committee requested the secretariat to prepare a preliminary evaluation of the results for the Committee's review at its sixty-third session. It also requested the secretariat to implement plans for a similar survey on occupational exposures, fostering close cooperation with the International Labour Organization and other relevant bodies, and to begin planning the collection of data on public exposures from natural and artificial sources of radiation.

6. Outreach activities

15. The Committee took note of a progress report by the secretariat on outreach activities, and acknowledged in particular the work done in Japan to disseminate the Committee's report on the levels and effects of radiation exposure due to the accident at the Fukushima Daiichi nuclear power station. It noted that the General Assembly had encouraged the secretariat to continue to disseminate the findings to the public. Outreach activities had included public meetings, media briefings, meetings with officials, discussions with academia and scientific presentations. The Committee recalled its outreach strategy for the coming years, in particular with regard to: further

enhancing the public website of the Committee; publishing an update to the United Nations Environment Programme (UNEP) booklet "Radiation: doses, effects, risks"; noting upcoming anniversaries, such as the sixtieth anniversary of the Committee's inception, the thirtieth anniversary of the Chernobyl accident and the fifth anniversary of the nuclear accident in Japan; developing leaflets and posters; and publishing booklets in the six official languages of the United Nations to explain the findings of its recent reports to the general public. The Committee took note of the fact that the Assembly, in its resolution 69/84, had encouraged consideration to be given to publishing the website in all the official languages of the United Nations. However, the Committee recognized that, within the existing resources, that ideal could be realized only in part.

B. Future programme of work

16. The Committee discussed preliminary plans for four projects: an appraisal of the health effects of low-dose radiation exposure, selected evaluations of the risk to health from radiation exposure, an evaluation of the risk of second cancers after radiotherapy, and an assessment of the impact on biota of radiation exposure due to the nuclear industry. Having considered the current work programme and capacity of both the Committee and its secretariat, the Committee decided to give priority to initiating selected evaluations of health effects and inferred risk from radiation exposure. While the other three project concepts all had their merits, and the risk of second cancers after radiotherapy was of particular interest to the Committee, the discussion of those project concepts would be resumed at the sixty-third session with a view to possible further action, conditional on the completion of other projects in the current programme of work.

C. Administrative issues

17. The Committee recognized that, because of the need to maintain the intensity of its work — particularly its work to improve the dissemination of its findings, including in official languages of the United Nations other than English — voluntary contributions to the general trust fund established by the Executive Director of UNEP to receive and manage voluntary contributions to support the work of the Committee would be beneficial. The Committee suggested that the General Assembly might encourage Member States to consider making voluntary contributions to the general trust fund for this purpose or to make contributions in kind.

18. In accordance with intentions expressed at its sixty-first session, the Committee reviewed its governing principles and the terms of reference for its Bureau, and subsequently reconfirmed them with only minor modifications.

19. The Committee agreed to hold its sixty-third session in Vienna from 27 June to 1 July 2016.